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## pLGAD - A Novel Detector Concept for Low Penetrating Particles

In Low Energy Physics, where particles only penetrate a few hundreds of nanometers within the active sensor depth, obtaining a position resolved signal with high efficiency at a reasonable cost is extremely difficult. While low-noise silicon sensors with internal amplification are available on the market, these sensors are often produced for High Energy Physics applications. Consequently, these sensors lack a thin entrance window (in the order of tens of nm) and full amplification of signals created near the sensor's surface (< 1  $\mu$ m) to provide a good signal to ratio for the efficient detection of low-penetrating particles.

In this poster, we propose a new pixelated silicon sensor based on the iLGAD (inverted Low Gain Avalanche Detector) principle. The pLGAD (low-penetrating Particles Low Gain Avalanche Detector) sensor concept is specifically designed to detect low-penetrating particles and will have a higher detection efficiency than non-silicon technologies while being a lot cheaper and easier to operate than other competing silicon technologies. Potential applications of such a sensor include usage in neutron beta decay experiments, low energy X-ray detection, medical physics and space experiments.

## **Primary experiment**

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